

UNDERSTANDING THE CAUSES OF INTERMEDIATE AND MIDDLE SCHOOL COMPREHENSION PROBLEMS

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*Special education teachers working in intermediate grades and in middle school grades face many challenges as they teach both developmental reading skills and subject matter material. Not only must they deal with the increased vocabulary and domain demands of teaching informational text, they must also handle the needs of students who have not yet mastered basic reading skills. The complexity of this task is reflected in recent NAEP fourth-grade reading scores that show approximately 30 percent of fourth-grade students reading at a proficient level or higher in the United States. While increased attention to vocabulary growth and exposure to informational text in primary grades may eventually ameliorate this problem in fourth-grade and beyond, currently intermediate and middle school teachers need instructional strategies they can use to foster reading skills, develop vocabulary, and teach subject matter comprehension to **all** students. We believe that current technology offers both special and general education teachers teaching at these levels the opportunity to use instructional cloze to improve students' reading ability and enhance subject matter knowledge.*

Scope of the problem

The percentage of American students who have difficulty with reading comprehension in fourth-grade and beyond remains high even though there has been a recent emphasis on comprehension research and teaching (Pressley, 2004). Data from the National Assessment of Educational Progress (NAEP) show that from 1992 and 2005 approximately 30 percent of fourth-grade students in the United States read at a proficient level or higher and approximately 36 percent of fourth-grade students read below the *basic* .students performing at or above *basic* level decreased from 80 percent in 1992 to 73 percent in 2005. Twelfth-grade students scoring at or above the *proficient* level declined from 40 percent to 35 percent. According to a Carnegie Report, nearly half of all 17-year-olds read at or below a ninth-grade level (de Leon, 2002).

Durkin's (1978/1979) finding that comprehension in grades three through six is often assessed but seldom taught casts a long shadow over American reading instruction. Teachers in her fourth grade sub-study spent less than one percent of their time teaching comprehension and more than 17 percent assessing it. More than twenty years after Durkin's study, Pressley (2001) noted little had changed. He observed considerably less comprehension instruction than comprehension assessment in classrooms. Shanahan (2007) notes:

Given our horrifying literacy statistics (e.g., only 8% of African American boys can read proficiently at 8th grade, the lowest NAEP 12th grade scores in more than 15 years, terrible high school completion rates for Hispanic youth, and the lowest amount of self-selected reading among young adults ever), we shouldn't be afraid to challenge the status quo—since what we have been doing clearly isn't working for the kids. (p. 19).

Context and schema and vocabulary need to be interrelated to aid in comprehension

Children need to be taught comprehension skills and strategies, but as important as these abilities are, they may not, by themselves, improve comprehension scores for struggling students or disabled readers. Improving student comprehension also requires improving decoding ability, vocabulary knowledge, fluency, world knowledge, and subject knowledge (Pressley, 2004). To understand how

this knowledge of schema and vocabulary reinforces and supports comprehension, consider this expansion of a concept made by Hirsch (2006). Many readers would associate the sentence *Abraham was told to sacrifice Isaac* with a biblical context. But if readers found that sentence on the sports page of a newspaper, the meaning of the words, though not the words themselves, would change for someone familiar with the specialized metaphors of baseball. But placing the sentence in its correct context still does not promote comprehension for a reader who lacks knowledge of baseball and its specialized vocabulary. Context is something, but it is not everything. The special meaning of the word *sacrifice* (advancing a base runner while making an out) may be too difficult to understand without background knowledge and familiarity with baseball terms.

The comprehension of subject matter material, the material of fourth-grade and beyond, presents a similar challenge for many students. Like our sports page readers, some students lack specific vocabulary knowledge, background knowledge, or an understanding of a subject's metaphors (Hirsch, 2003). Obviously, a student's being able to recognize most or all of the words in informational text may not guarantee comprehension of the material. Gregg and Sekeres (2006) point out that students do not necessarily understand the meaning of words they are able to pronounce. Nor do students *somehow* learn to comprehend complex text as they move through the grades (de Leon, 2002).

Pressley (2000) regards comprehension as a developmental, multicomponential process. To comprehend informational text, students need to be familiar with both the content of the material and possess a general and specific knowledge of the subject and its vocabulary (Hirsch, 2003; Neufeld, 2005/2006). In addition to vocabulary instruction, teachers need to instruct students in the background knowledge of the subject they are reading (Brown, 2007; Hirsch, 2000; Neufeld, 2005/2006; Neuman, 2001). Students who are familiar with a subject learn new material in that subject more quickly than students who do not possess the same depth of knowledge and background understanding. This is the rich getting richer—the other side of the Matthews effect. Researchers focusing on comprehension problems, especially on students who begin having comprehension problems after primary education, think many of these students lack sufficient subject-matter vocabulary and domain knowledge to deal with the demands of expository text (Chall, 2000; Chall, Jacobs, & Baldwin, 1990; Hirsch, 2003).

School organizing patterns influence curriculum, student comprehension, and teaching

American students are diverse and begin school with different backgrounds. Some students begin school with vocabulary knowledge of a few thousand words; others have vocabulary two or three times larger than that (Hart & Risley, 1995; Weizman & Snow, 2001). Trying to compensate for these differences, beginning reading instruction uses narrative materials and a vocabulary basic to all students. This approach seems logical, but without informational text as a significant part of the primary grade curriculum, vocabulary and reading skills are decontextualized (Damico, 2005), and not grounded in subject matter learning (Hirsch, 2003). When social studies, science, and math begin to be factored more heavily into the curriculum around grade four, even some primary grade students who read narrative material fluently have difficulty reading and comprehending subject material (Chall, 2000). These organizational problems affect all students, but since the majority of learning disabilities manifest as reading problems, special education students are especially impacted.

Yet we know that children entering school can handle both informational and narrative text. In Pappas' (1991) study, kindergarten children retold narrative and informational text equally well. Pressley (2001) indicated that comprehension teaching in the primary grades makes an impact on student learning. Reutzel and Cooter (2004) note that both Vygotsky and Piaget posit the interrelationship between cognitive development and language development. Cunningham and Stanovich (1998) have shown that first-grade vocabulary knowledge predicts approximately 30 percent of 11th-grade comprehension.

This argues for teaching more vocabulary and introducing informational text in the primary grades. Many reading authorities now believe that beginning readers should be taught comprehension skills at the start of their academic careers (Reutzel & Cooter, 2004). Publishers are beginning to respond to this insight by including informational text in their instructional programs as early as first-grade (Kurkjian & Livingston, 2005). Yet, although informational texts help students develop background knowledge and conceptual data, Yopp's (2006) findings point out that a very small proportion of read-alouds in primary grades involve subject-matter material. Unfortunately, the narrative emphasis found in elementary grades lessens the opportunities for some students to acquire needed subject knowledge that will help their future learning.

Challenges for teachers

Dealing with these subject-matter/comprehension problems becomes a challenge for intermediate grade teachers because they must also deal with students of different reading skills and ability. For example, students in a fourth-grade class can have reading levels that range from grade one to grade seven (Harris & Sipay, 1985). Although primary-grade teachers can differentiate text to meet individual needs, teachers who teach higher grades have a more complex problem. They have to deal with subject matter instruction, developmental reading needs, and with students who have disabilities and who have not yet acquired sufficient reading skills or vocabulary knowledge to handle informational text. As primary teachers do, these teachers can also differentiate text and instruction, but this differentiation must eventually lead to students' ability to read grade level material. Failure to do so means students will fall further behind grade level as subject demands created by the specialized vocabulary and the conceptual nature of informational text combine to produce still more difficult text and material for students to deal with. Unless struggling readers receive help, they tend to remain poor readers throughout their school career (Juel, 1988).

Although some primary students require more instructional time, more cross genre reading opportunities (Neuman, 2001; Sanacore, 2002), more vocabulary instruction (Chall, 1967; McIntyre et al., 2005), and more opportunities to use vocabulary knowledge in conversation (Miller & Gildea, 1987; Weizman & Snow, 2001), many are at grade level or near grade level readers in third-grade, only to begin to fall behind beginning in intermediate grades, accelerating a downward spiral that increases in middle school and beyond (Chall et al., 1990). What we know about vocabulary, reading volume, and cognitive development (Cunningham & Stanovich, 1998; Stanovich & Cunningham, 1993) argues in the direction of introducing subject matter concepts and subject matter vocabulary earlier than we presently do (Biemiller, 2001; Moss, 2005). Basic subject concepts learned in the primary grades help students deal with enlarged, more sophisticated, but similar concepts presented in the intermediate grades and beyond. Conceptual, articulated curriculum like this works well, especially when an entire school dedicates itself to wide-ranging, developmental subject matter and literacy instruction (Lipson, Mosenthal, Mekkelsen, & Russ, 2004). Intermediate grade teachers meet the complex task of teaching reading skills, comprehension strategies, vocabulary, and the multifaceted problems of subject matter text by using a variety of activities, supports, and scaffolds. One of our favorites is instructional cloze.

Instructional cloze revisited

Instructional cloze offers teachers a number of benefits and can help them meet many of their classroom goals: cloze can engage students in subject matter knowledge, help with word recognition problems, teach subject vocabulary, and improve reading skills. Although instructional cloze has a successful history (Jongsma, 1980), it is often overlooked because cloze exercises were difficult for teachers to create and modify in the past. Recently, though, the Internet and the proliferation of word processing programs have created instructional opportunities for using cloze in classrooms. Used with other strategies, instructional cloze now meets many teachers' needs. Cloze creates excellent summaries and reviews, engages students with text, focuses vocabulary instruction (Curtis & Longo, 2001), allows teachers to use vocabulary learning to foster word recognition development, can convert subject matter text to narrative text, can simplify complex concepts, and can be used for different types of re-reading exercises. And all of these activities have an additional advantage; they can be grounded in subject matter learning.

Taylor introduced cloze in the early 1950s to validate the readability of prose passages (Grant, 1979). His landmark study showed that exact replacement words ranked text in the same order as the Dale-Chall and Flesch readability formulas (Dale, 1999). Cloze mirrors readability because the reader must draw upon three informational sources at the same time—graphophonic, syntactic, and semantic. These skills are regarded as the most proficient processing strategies a reader can use (Thomas, 1978), and their use makes cloze an excellent support system for developmental reading instruction, for supporting comprehension strategies, and for teaching vocabulary and providing background information.

When using cloze as a test for readability, every fifth word is usually deleted, but for instructional purposes Schell (1972) believed that selective deletion worked better. Thomas (1978) also used selective deletion for instructional purposes in exercises of General Context Clues. Sampson, Valmont and Van Allen (1982) successfully used cloze in a third grade setting to increase reading comprehension scores. Jongsma (1980) in a review of cloze instructional research wrote:

In summary, it appears that selective deletion systems aimed at particular

contextual relationships are more effective instructionally than semi-random deletion systems such as every-nth word or every-nth noun-verb. (p. 17).

How to use Cloze to improve subject matter comprehension

Since technology has made the use of cloze more convenient, teachers can use it for social studies, science, literature, or math. Free downloads are available on the Internet for these subjects, or teachers can use software that helps them create their own exercises. For example, consider how the following social studies cloze exercise [Table 1] created from materials summarized from Barnett Schecter's book (2002), *The Battle For New York*, [Table 2] captures the highlights and helps students understand the beginning of the battle, the longest running battle of the American Revolution. This cloze exercise engages students and allows the teacher instructional options to deal with subject matter and reading skills while at the same time providing the teacher with the options of creating a review or a summary. The teacher first taught vocabulary (mostly place names, using structural analysis where needed to improve word recognition skills), used maps and timelines, modeled reading and thinking-aloud. Students read from their text silently in small groups, wrote and asked group questions, and then read orally in their groups to answer teacher created questions. Finally, the teacher used cloze as both a summary review (with a word bank) and then at a later date as a quiz (without the word bank). Students kept the cloze exercises for use as review sheets.

Cloze deletions were aimed at engaging students in subject matter knowledge. Before students attempted the cloze exercise, the teacher made sure students could pronounce the words in the word bank. The students answered as many of the cloze questions as they could from memory, and then they looked back at the story for help. While dealing with subject matter, the teacher handled many reading needs in the classroom—decoding, word recognition, fluency and vocabulary development, and comprehension skills.

Table 1
Instructional Cloze based on the reading

After the Battle of () British soldiers started landing on () July 3, 1776, one day before the () was signed. Since Washington did not have a (), he had to guess where the British would decide to fight, on the Brooklyn part of () Island or on () Island. He decided to () his army and place soldiers on both () Island and () Island. The British commander, (), landed his troops in Brooklyn. Washington decided to defend hills still called (). The British soldiers captured a poorly defended road and got () the American soldiers. Washington retreated across the () to () Island. The American army escaped up a main road that today is called (). They won a battle at (). Finally, Washington withdrew across the Hudson River and began a () across (). On Christmas Eve, 1776, Washington crossed the () to attack and defeat the British at ().

WORD BANK – (Some words may be used more than once): East River, behind, Manhattan, Broadway, Boston, Trenton, retreat, Staten Island, Long, New Jersey, split, General Howe, Harlem Heights, Declaration of Independence, Delaware River, Brooklyn Heights, navy.

Table 2
Subject matter reading

After the Battle of Boston, Lord Howe, the British general, landed troops on Staten Island July 3, 1776. The next day, July 4, the Declaration of Independence was signed. In the next six weeks, the British landed 30,000 more soldiers.

General Washington had no navy. He could only watch as the British had control of the sea. They could land men on Manhattan or on Long Island. Washington split his army. He left soldiers on Manhattan. He sent other soldiers to Brooklyn on Long Island. This weakened his army.

On August 22, the British landed troops on Long Island. Washington dug in around a group of small hills called Brooklyn Heights. The hills had four roads through them. One road, far from the fighting, had only a few soldiers to defend it.

On August 26th, Howe's troops captured that road and made their way behind the American lines. They also attacked and forced the American troops back. But the British did not follow up their attack. If they had, they might have won the war then.

Washington retreated across the East River the night of August 30. The next day the British found that the American army had left.

Again Lord Howe did not follow-up his attack. Washington moved his army north. On September 13, Howe attacked across the East River. He just failed to trap Washington's army. The two armies fought a brief battle at Harlem Heights and the British retreated.

In November 1776, Washington withdrew across the Hudson River to New Jersey, stopping at a site close to today's George Washington Bridge. From there he began a slow retreat across New Jersey before turning and crossing the Delaware River on Christmas Eve, 1776, to attack and defeat the British at Trenton.

Final Thoughts

In summary, we believe cloze exercises provide teachers with a flexible instructional device that gives them the ability to control readability, provide a review of material, scaffold and support subject matter learning, and engage students both contextually and semantically. Used with graphic organizers and comprehension strategies, cloze is a useful strategy that helps students conceptualize subject matter, and contextualize vocabulary and developmental reading skills. In addition, by students keeping and then referring to the different cloze reviews used in class, they build cumulative subject knowledge because the cloze exercises function as mini-review texts, and are easier and quicker to refer to than the class text.

Teachers can also use cloze to enhance fluency by combining it with subject matter Readers Theatre. This use of Readers Theatre allows students to rehearse and present social studies, math, science, or language arts scripts in a mix of choral readings, combining whole group, small group, and individual performances. Instead of memorizing lines, students read aloud from their scripts (Graves, Juel, & Graves, 2008). Scenes are not staged and there is little costuming. The focus remains the spoken word, though presentations may be enhanced by the use of music or sound effects. As an extension of the above exercise, parts of the Battle for New York, the Battle of Harlem Heights, Washington crossing the Delaware, or the American victory at Trenton could be researched and scripted by students, or a social studies script dealing with events from the American Revolution could be downloaded from the Internet, practiced, presented, then modified as cloze and used for review and vocabulary development. *These coordinating activities succeed in uniting subject knowledge and literacy learning.*

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